

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the Application:

Listing of Claims:

62
X
Claim 1 (Previously Presented): A method of creating a relational database so that multiple simultaneous hierarchies can be defined without needing dedicated database relationships between objects in the multiple hierarchies, wherein the relational database includes a plurality of objects each having an associated data to be accessed; said method comprising:

forming a first database table having a plurality of entries, each entry representing an object with an associated data to be accessed;

forming a second database table having a plurality of entries, each entry defining a relationship between at least some of said plurality of objects, wherein each entry is associated with at least one of the multiple hierarchies; and

designating a parent-child relationship between a first object and a second object in each entry, wherein the relationship is reversible, so that the first object can be denoted as a parent to the second object in a first entry, and the second object can be denoted as a parent to the first object in a second entry.

Claim 2 (Original): The method of claim 1 wherein each of said plurality of relationships is defined between a pair of said objects.

Claim 3 (Cancelled).

Claim 4 (Original): The method of claim 1 wherein said plurality of relationships include single parent and multiple parent hierarchies.

Claim 5 (Previously presented): The method of claim 1 wherein said plurality of relationships include tree type structures.

X
Claim 6 (Original): The method of claim 1 further comprising:

42
f1
forming a ~~third database table~~, said third database table having a plurality of entries, each entry being a summary of said data from a plurality of entries from said first database table.

Claim 7 (Original): The method of claim 5 wherein each entry in said second database table defines a relationship between a pair of said objects.

Claim 8 (Original): The method of claim 7 wherein said relationship is between a parent and a child.

Claim 9 (Original): The method of claim 8 wherein each entry in said second database table further defines a direct or indirect parent-child relationship.

Claim 10 (Original): The method of claim 8 wherein each entry in said second database table further comprises a definition of a database structure to which said relationship is a part thereof.

Claims 11 – 20 (Cancelled).

Claim 21 (Previously Presented): A method of creating a relational data structure for storage and retrieval of data having multiple simultaneous hierarchical database relationships without needing dedicated database relationships between objects in the multiple hierarchies, the method comprising:

forming a table of members available in the multiple simultaneous hierarchical database relationships and data to be accessed associated with each member;

forming a table of reporting relationships among the members available in the multiple simultaneous hierarchical database relationships; and

forming a table having a set of hierarchies, each hierarchy corresponding to a reporting relationship in said table of reporting relationships; and

designating a reversible parent-child relationship between pairs of members, wherein a first member can be denoted as a parent to a second member, and the second member can be denoted as a parent to the first member.

Claim 22 (Cancelled).

42
51

Claim 23 (Currently Amended): A method for representing at least a first hierarchical relationship using a relational data structure, wherein the first hierarchical relationship includes a plurality of objects, wherein each of the plurality of objects is related to at least one other object of the plurality of objects as a parent object or a child object in a parent-child relationship, the method comprising:

creating a first table having multiple entries, each entry including ~~at least some~~ one of the plurality of objects and associated data to be accessed, wherein the first table associates each of the plurality of objects with an object identifier, and wherein ~~the creating includes populating the first table with the associated data regardless of whether the associated data is unique for multiple entries~~ each of the multiple entries comprise only the object identifier and the associated data; and

creating a second table, wherein each parent-child relationship is represented by associating the object identifier of each parent object with the object identifier of each related child object and indicating that each parent-child relationship is associated with the first hierarchical relationship, so that multiple simultaneous hierarchies can be defined using the relational data structure without needing dedicated database relationships between objects in the multiple hierarchies.

Claim 24 (Original): The method of claim 23 further including defining a second hierarchical relationship in the second table using the plurality of objects included in the first hierarchical relationship, wherein the second hierarchical relationship is defined by:

creating at least one different parent-child relationship than is present in the first hierarchical relationship; and

indicating that the different parent-child relationship is linked to the second hierarchical structure.

Claim 25 (Original): The method of claim 24 further comprising creating a third table, wherein the third table includes a summary of the first and second hierarchies.

Claim 26 (Original): The method of claim 24 further comprising retrieving data associated with at least one of the plurality of objects in a single round trip.

32
f1
Claim 27 (Original): The method of claim 23 further comprising indicating whether each parent-child relationship is direct or indirect.

Claim 28-30 (Cancelled).

Claim 31 (Previously Presented) A relational data structure for representing multiple simultaneous hierarchies without needing dedicated database relationships between objects in each of the multiple hierarchies, wherein the relational data structure is based on a plurality of objects, the data structure comprising:

a first table for:

organizing a plurality of objects into at least first and second entries, wherein each object is related to at least one other object by a defined relationship;
storing an object identifier associated with each of the plurality of objects;
storing associated data to be accessed for each object identifier, wherein the storing is performed regardless of whether the data stored in the first entry is unique with respect to the data stored in the second entry; and

a second table for:

associating the object identifier of each of the plurality of objects with the object identifier of each related object to represent each defined relationship; and
storing a hierarchy identifier associated with each relationship for indicating that each relationship is associated with a particular one of the multiple hierarchies.

Claim 32 (Original): The relational data structure of claim 31 further comprising a third table for storing a summary of each of the multiple hierarchies.